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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/745,136	12/20/2000	Osamu Koshiba	TI-29267	6615

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TEXAS INSTRUMENTS INCORPORATED
P O BOX 655474, M/S 3999
DALLAS, TX 75265

EXAMINER

HERNANDEZ, NELSON D.

ART UNIT	PAPER NUMBER
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2612

DATE MAILED: 06/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/745,136

Applicant(s)

KOSHIBA ET AL.

Examiner

Nelson D. Hernandez

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Information Disclosure Statement

1. The following references listed in the specification have been considered by the examiner:

US Patents 5,412,425 and 5,528,293; and Venkataraman et al, "Next Generation Digital Camera Integration and Software Development Issues" in Digital Solid State Cameras: Design and Applications, 3302 Proc. SPIE (1998).

Claim Objections

2. Claim 1 objected to because of the following informalities: in claim 1, line 3, in "the green subarray a Bayer pattern" should be written as "the green subarray of a Bayer pattern". Appropriate correction is required.
3. Claim 2 objected to because of the following informalities: in claim 2, line 2, "interpolate step (a)" should be written as "interpolation step (a)". Appropriate correction is required.
4. Claim 4 objected to because of the following informalities: in the numbering "(a), (b), (c), (c)" must be changed to "(a), (b), (c), (d)". Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. Claims 1² and 3-6 rejected under 35 U.S.C. 103(a) as being unpatentable over Rashkovskiy, US 6181376 B1 in view of Murphy, US 6348919 B1.

Re claim 1, 4 and 6, Rashkovskiy discloses a system (Fig. 2 and Appendix A) and method of interpolation for a Bayer color-filtered array, comprising the steps of: interpolate the green subarray a Bayer pattern color-filtered array (Fig. 7) to form a first green array (Col. 5, lines 26-52); and interpolate the red and blue subarrays (Col. 6, lines 12-34). Furthermore, regarding to claim 6, Rashkovskiy teaches a processor (Fig. 2: 26, col. 4, lines 5-11) for execute said interpolation method, but does not explicitly disclose a step of clamp the interpolated pixel values of the first green array to lie in the range of the middle two values of the four neighboring values of the green subarray, the clamp of the first green array yields a final green array.

However, Murphy teaches an interpolation method wherein the interpolated value is being clamped so that said interpolated value does not underflow or overflow a permitted color range (Col. 47, line 60 – col. 48, line 6).

Therefore, taking the combined teaching of Rashkovskiy in view of Murphy as a whole, it would have been obvious to one of ordinary skill in the art to clamp the interpolated pixel values of a color to lie in a predetermined range with the motivation of requiring two increments values per color component, one to move along a dominant edge and one to move across a connection to the subordinate edge as suggested by Murphy.

Re claim 2, the combination of Rashkovskiy in view of Murphy does not teach that the interpolation method is being execute by a symmetric 5x5 FIR filter.

However, Rashkovskiy teaches the interpolation method by using symmetric FIR filters (Col. 5, lines 53-63), to interpolate a value of a pixel, but does not explicitly teach that the symmetric FIR filter is a 5x5 FIR filter. However, Official Notice is taken that the use of different sizes of symmetric FIR is notoriously well known in the art to interpolate a desired value with a preferred size of FIR filter and would have been obvious to one of ordinary skill in the art to use a preferred size of FIR filter to execute the interpolation as claimed. The motivation to do so would help the system to maintain a predetermined precision when calculating the missing pixels. For example, using a bigger size of symmetric FIR filter would help the system in the case of interpolating pixel values when having defective neighbor pixel values.

Re claim 3 and 5, Rashkovskiy teaches the interpolation method to calculate the green values at the red and blue pixel locations (Col. 5, lines 26-51), therefore the original values would remain unchanged.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nelson D. Hernandez whose telephone number is (703) 305-8717. The examiner can normally be reached on 8:30 A.M. to 6:00 P.M..

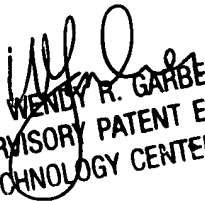
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy R. Garber can be reached on (703) 305-4929. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nelson D. Hernandez
Examiner
Art Unit 2612

NDHH
May 5, 2004


WENDY R. GARBER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600